

WHAT IS CLAIMED IS:

1. A method of utilizing a programmable plurality of resources on an  
5 integrated circuit comprising:
  - a. selecting a user module representing an electronic design;
  - b. comparing a description of a hardware resource requirement of the  
user module with a description of the plurality of programmable resources on the  
integrated circuit; and  
10 c. identifying a first allowed programmable hardware resource on the  
integrated circuit satisfying the hardware resource requirement of the user  
module.
- 15 2. The method according to Claim 1 wherein the description of the hardware  
resource requirement of the user module is represented as XML data.
3. The method according to Claim 1 wherein the description of the plurality of  
programmable resources are represented as XML data.
- 20 4. The method according to Claim 1 further comprising highlighting the first  
allowed programmable hardware resource using a graphical user interface.

5. The method according to Claim 1 further comprising identifying a second allowed programmable hardware resource on the integrated circuit satisfying the hardware resource requirement of the user module.

5 6. The method according to Claim 5 further comprising highlighting the second allowed programmable hardware resource using said graphical user interface.

10 7. The method according to Claim 1 further comprising identifying a disallowed programmable resource on the integrated circuit wherein the disallowed resource represents an unavailable resource on the integrated circuit that otherwise satisfies the hardware resource requirement of the user module.

15 8. The method according to Claim 7 further comprising highlighting the disallowed programmable resource using said graphical user interface.

9. The method according to Claim 8 wherein the disallowed programmable resource is highlighted in gray.

20 10. The method according to Claim 1 further comprising updating the description of the hardware resource requirement of the user module.

11. The method according to Claim 10 wherein updating is performed in response to changes in a hardware resource requirement of the user module.

12. The method according to Claim 1 further comprising adding an additional  
5 user module to the description of the hardware resource requirement of the user module.

13. The method according to Claim 1 further comprising updating the description of the plurality of programmable resources on the integrated circuit.

14. The method according to Claim 13 further comprising adding an additional chip description to the description of the plurality of resource on the integrated circuit.

15. An apparatus comprising:  
a. a user module description database containing a description of a hardware resource requirement of a user module;  
b. a hardware description database coupled to the user module description database and containing a description of a hardware resource of an  
20 integrated circuit; and  
c. a resource placement locator coupled to the user module description database and configured to compare the description of the hardware

resource requirement of the user module with the description of the hardware resource of the integrated circuit.

16. The apparatus according to Claim 15 wherein the user module description  
5 database is represented as XML data.

17. The apparatus according to Claim 15 wherein the hardware description database is represented as XML data.

10 18. A computer implemented method of determining hardware resources for an electronic design comprising:  
a) selecting an electronic design represented as a user module;  
b) accessing a data description of resources required for said user  
module;  
15 c) accessing data descriptions of a plurality of programmable resources of an electronic device; and  
d) comparing said data description of said user module with said data descriptions of said plurality of programmable resources to automatically  
determine potential placement options of said user module among said plurality  
20 of programmable resources.

19. A method as described in Claim 18 further comprising:  
displaying on a graphical user interface, a first potential placement of said  
potential placement options; and  
25 in response to a user selecting a next placement icon, displaying on said graphical user interface, a second potential placement of said potential placement options.

20. A method as described in Claim 19 wherein potential placement options are displayed using visual attributes and wherein said electronic device is a programmable microcontroller device.

5 21. A method as described in Claim 18 wherein said user module requires one programmable resource to place.

22. A method as described in Claim 18 wherein said user module requires two programmable resources to place.

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23. A method as described in Claim 18 wherein said plurality of programmable resources comprise a plurality of analog programmable resources and a plurality of digital programmable resources.

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24. A method as described in Claim 18 wherein said comparing automatically prunes out programmable hardware resources that do not satisfy requirements of said user module.

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25. A method as described in Claim 18 wherein said data descriptions are created in XML.

26. A computer system comprising a processor coupled to a bus and a memory coupled to said bus and containing instructions that implement a method of determining hardware resources for an electronic design comprising:

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a) selecting an electronic design represented as a user module;

b) accessing a data description of resources required for said user module;

c) accessing data descriptions of a plurality of programmable resources of an electronic device; and

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d) comparing said data description of said user module with said data descriptions of said plurality of programmable resources to automatically

determine potential placement options of said user module among said plurality of programmable resources.

27. A computer system as described in Claim 26 wherein said method further comprises:

displaying on a graphical user interface, a first potential placement of said potential placement options; and

in response to a user selecting a next placement icon, displaying on said graphical user interface, a second potential placement of said potential placement options.

28. A computer system as described in Claim 27 wherein potential placement options are displayed using visual attributes and wherein said electronic device is a programmable microcontroller device

29. A computer system as described in Claim 26 wherein said user module requires one programmable resource to place.

30. A computer system as described in Claim 26 wherein said user module requires two programmable resources to place.

31. A computer system as described in Claim 26 wherein said plurality of programmable resources comprise a plurality of analog programmable resources and a plurality of digital programmable resources.

32. A computer system as described in Claim 26 wherein said comparing automatically prunes out programmable hardware resources that do not satisfy requirements of said user module.

33. A computer system as described in Claim 26 wherein said data descriptions are created in XML.